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NOTICE

This new worldwide serial publication is being established to report on policies and activities in the telecommunications field. Economic and technological developments in computers, satellite communications, and telecommunications will be also be included. Coverage will be worldwide with focus on France, Federal Republic of Germany, United Kingdom, Italy, Japan, the USSR, People's Republic of China, Sweden and the Netherlands.

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TRANSLATIONS ON TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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SAUDI ARABIA ORDERS TV EQUIPMENT FROM FRANCE

Paris LE MONDE in French 8 Apr 77 p 25

[Text] Dr Abduh Yamani, Saudi Arabia's minister of information, made an official visit to France from 4 to 8 April during which he met with Minister of Industry, Commerce and Artisans Rene Monory to focus on cooperation between the two countries in the field of color TV.

The Saudi development program aims in the immediate future at setting up the equipment for two color television channels, with provision for a third one later. Yamani stated that the total cost of labor and equipment might come to 6 billion francs. Of this sum, the basic equipment will cost 2 billion francs, the civil engineering projects another 2 billion francs and maintenance, training and operation of the system [the remaining 2 billion francs].

Officially, the French companies--Thomson and TDF [no expansion given]--have been assured that they will receive orders for the equipment as a result of private contracts already arrived at. Nevertheless, only a third of the equipment has actually been installed, since their procurement depends directly upon the progress of the civil engineering, which progress is in most cases still the subject of discussions between the international companies and the Saudis. Yamani hopes, however, that the work will be finished by 1978 or 1979.

The Saudi Arabian minister of industry and the PTT will be in France from 18 to 21 April on an official visit during which time economic cooperation will again be discussed, along with the possibility of having France supply Saudi Arabia with telephone exchanges.

CSO: 5500

BRIEFS

FRANCE-SAUDI ARABIA TELEVISION AGREEMENT--French participation in the development of color television [broadcasting] in Saudi Arabia could be worth more than 4 billion francs to the French industries involved. At the close of his discussions with Muhammad Abduh Yamani, Saudi minister of information, [French government representative Rene] Monory said that in addition to supplying equipment worth 2 billion francs for which the Saudi government had already contracted late in 1974, French industry had "a very good chance" of getting a "new piece of the action" in the form of 2 billion francs in contracts for the civil engineering end of the work. The Saudi development plan is mainly concerned with the setting up of two television channels, with provisions for a third one to be added later, plus seven production studios in Riyadh and the provinces, and 75 to 80 broadcast and relay stations. [Text] [Paris ELECTRONIQUE ACTUALITES in French 8 Apr 77 p 2]

'EUTELSAT' FORMED--On 25 March, in Paris, EUTELSAT was formed. It is made up of the ministers in charge of telecommunications for the nine participating European countries who will assure the establishment, exploitation and maintenance of space operations for satellite telecommunications systems. The final agreement is to be signed in May 1977. [Text] [Paris AVIATION MAGAZINE INTERNATIONAL in French 15-30 Apr 77 p 21]

FINNISH FACTORY FOR SAUDI ARABIA--The Finnish firm Valco (60 percent of the shares of which are held by the Finnish government, 20 percent by Salora and 20 percent by Hitachi) intends to sign a contract in Saudi Arabia soon for the construction of a TV tube factory there. This plant (5,020 square feet) will cost 7.5 million pounds. It can be operational within 18 months. Its annual production capacity will be 40,000 tubes. These tubes (110-degree in-line tubes) will be patterned after those of the Japanese firm Hitachi. [Text] [Paris ELECTRONIQUE ACTUALITES in French 8 Apr 77 p 2]

CSO: 5500

OKINAWA LIKELY TERMINAL OF TAIWAN-JAPAN SEA CABLE

Tokyo KYODO in English 1225 GMT 29 Mar 77 OW

[Text] Naha, 29 Mar KYODO--Kokusai Denshin Denwa Company has initiated plans to lay a seabottom communications cable between Japan and Taiwan, with the growing communications center of Okinawa being considered as the top candidate for the Japanese landing site.

Japan and Taiwan are now linked by INTELSAT communication satellites, but because of the recent sharp rise in communications between the two countries and the frequency of satellite reception breakdown, KDD has started planning for cable hook-up.

While the final decision on the landing station has yet to be made, Okinawa, the terminal point of cables now being laid to Luzon in the Philippines and Hong Kong, is thought to be the likely choice.

The chief of the KDD Okinawa International Communications Office, Tomokiyo Shikina, says that there is a strong possibility that the Minatogawa Station in Gushigami, the present site of the second trans-Pacific cable linking Okinawa with Guam, Hawaii, and the U.S. mainland, will be selected.

The relay station, located along the southern coast of the main island of Okinawa, will also handle the Oluho cable to Luzon and Hong Kong. Shikina says that the cable is scheduled to be completed in August, and that there are plans to extend it from Hong Kong to Singapore, Australia, and other Southeast Asian countries from next year.

The addition of the Taiwan cable would make Minatogawa a major focal point for the Western Pacific communications network.

Construction work on a 2,700-circuit underground cable between the Uranbara Station in Chinen, Okinawa, and Esahara, Miyazaki, is expected to be completed next month. KDD officials say there is a possibility that the Uranbara Station circuits will be linked to the Okinawa seabottom relay station through Naha.

At the current time there is one seabottom cable running between Taiwan and the U.S. Hamby Airfield in Okinawa, and the growth of Okinawa as a communications center could possibly influence the future of the U.S. Far East defense policy.

Plans for the link-up with Taiwan have come less than one year after the completion of a seabottom cable tying China and Japan between Shanghai and Reihoku, Kumamoto Prefecture.

Shanghai and Osaka were linked by wireless telegraph in 1948, and a wireless telephone system was established between Tokyo and Peking in 1958. After the normalization of relations in 1972, the two countries were linked by satellite television and work was begun on the communications cable.

The 850-kilometer cable, built at a total cost of 6,000 million yen divided between the two countries, was opened for service in September last year. Its capacity is 480 telephone circuits.

CSO: 5500

INQUIRY INTO ALLEGED SECURITY BREACH

Wellington THE EVENING POST in English 6 Apr 77 p 6

[Text] The Privacy Commissioner (Mr G.R. Laking) is carrying out an inquiry into alleged breaches of security at the Wanganui Computer Centre.

The act covering the computer centre's establishment provides for the Privacy Commissioner to inquire into any matters relating to the operation of the act to assist the computer centre policy committee (headed by Sir Thadeus McCarthy) to determine policies.

The centre was built to hold records for the Police, Transport and Justice Departments on a nationwide basis.

Three weeks ago, the prime minister (Mr Muldoon) announced that the elaborate precautions at the centre had turned up the fact that an employee had obtained information from the computer without authorisation. The employee had since resigned.

On Monday this week, a former employee appeared on television under a fictitious name and said he had twice obtained information, from the police records in the computer, once for a friend and then for a man he subsequently decided was a member of the police intelligence section.

Help

The Commissioner of Police (Mr K. B. Burnside) said yesterday that, although the computer centre act came into effect after the events referred to on television, "I have had the facts reported to the Privacy Commissioner."

Mr Laking said today that this was in response to an inquiry he had made to Mr Burnside last week.

Although the incident occurred before the act came fully into force, he had asked the police for details "as soon as I became aware from the State Services Commission of what had happened."

Mr Laking said the Commissioner of Police was "forthcoming immediately," and that other officers were made available for discussions.

"I have had some discussions with the police since I received the report," he said.

Mr Laking said he did not know how long he would take to complete his inquiry, but he would do it as quickly as he could.

The Cabinet is likely to discuss security at the Wanganui Computer Centre at its meeting next Tuesday, but no decisions are likely immediately.

The issue will probably be referred for study to the Cabinet committee on State Services.

It is understood the minister of state services (Mr Gordon) has already received a report from the policy committee of the computer centre on security.

Mr Gordon has already indicated that personnel screening for the centre may be tightened.

The Cabinet will also have a grapple with whether the centre's security should be the responsibility of a private firm, as is the case now, or the police. The minister of police (Mr McCready) favours the latter course.

Mr Gordon said today that he had yet to be convinced that it would be worth having the police on duty at the centre 24 hours a day when they could be busy on other work.

The minister was not alarmed at the latest reported case of a security breach at the centre. A mechanic has claimed that early in March he was allowed in because he was mistaken for someone else.

Mr Gordon said a report would be sent to him on the incident. However, the man had not penetrated far into the building and had gone nowhere near information held there. It was a minor security breach.

CSO: 5500

BRIEFS

WIRED RADIO STATIONS--The information sector is building 20 microwave relay/wired radio stations [daif truyenf cacs songs cuwcj ngawns] in 20 major agricultural districts in Ha Nam Ninh, Thai Binh, Hai Hung, Thanh Hoa, Nghe Tinh, Ha Son Binh, Phu Khanh and Hau Giang provinces and Ho Chi Minh City. A wired radio network with sufficient receiving, broadcasting and recording equipment will be established in nearly 500 agricultural cooperatives in these districts. Half to two-thirds of cooperative families will be provided with loudspeakers. [Hanoi Domestic Service in Vietnamese 0530 GMT 3 Apr 77 BK]

CSO: 4909

SATELLITE TRACKING STATION TO BE COMPLETED

Budapest MAGYAR NEMZET in Hungarian 10 Apr 77 p 3

[Article by Zoltan Gyulai: "Intersputnik - The Terrestrial Satellite Communication Station in Hungary Will Be Completed by the End of the Year"]

[Text] "In compliance with the provisions of a decree promulgated by the government of the People's Republic of Hungary, the Hungarian Postal Service will set up an Intersputnik space communication station in Taliandorogd during 1975-1977. The station enables long-distance continental and intercontinental exchange of television and radio programs, and telephone communication with the member countries of the Intersputnik system. The ground station will be built with Soviet technical assistance. With the festive deployment of the cornerstone, we declare the construction in progress."

The above is the text of the inaugural document signed on 17 May 1976 in Taliandorogd by Dezso Horn, deputy minister of transportation and postal affairs, general director of the Hungarian Postal Service, and Yuri Ivanovich Krupin, general director of the Intersputnik International Space Communication Organization.

Why Taliandorogd, of All Places?

The cornerstone was deployed almost exactly one year ago, with the inaugural document embedded in it; however, the history of the Hungarian ground station of the Intersputnik organization is longer than that. Bulgaria, Czechoslovakia, Cuba, Poland, Hungary, Mongolia, the German Democratic Republic, Romania, and the Soviet Union established this organization on 15 November 1975. Any country may join it if, at the time of affiliation, it endorses the agreement dealing with the development of radio and television program exchange among the member countries. The government of Hungary

ratified the agreement in 1972, and decided to build a ground station in 1973. The late Dr Gyorgy Csanadi, then minister of transportation and postal affairs, signed an intergovernmental agreement to this effect, which stipulated that the construction will be assisted by the Soviet Union.

One way in which this assistance has manifested itself was that the location of the facility was decided with the help of Soviet experts. The Hungarian Postal Service examined cartographically the entire country, looking for a valley where the station can be erected and where there are no residential areas in the vicinity (to provide biological security). Eleven such valleys were located in Hungary. Then, additional requirements were considered: the station must not be located in an electrical field, which might interfere with the weak signals coming from outer space; the valley must not be too deep so that the paraboloid mirror of the station can "see" and track the orbiting artificial satellite. This eliminated eight from the 11 locations initially selected. Three were left in the running: Jasd, Kovagoors, and Taliandorogd. Then, secondary aspects were considered, and finally, the choice was made. It was Taliandorogd, which is a small village near the road connecting Veszprem and Tapolca.

With Soviet Cooperation

The Elektroimpex and Prommasheksport enterprises concluded in early 1974 the agreement providing for the shipment of Soviet-made communications-engineering equipment and the Soviet participation in the designing of the Hungarian ground station. The Hungarian designer is the Design Bureau of the Postal Service; the Russian designer is the GSPI, which is the design bureau of the Postal Service of the Soviet Union. The investing organ is the Central Investment Bureau of the Postal Service; the operating organ is the Radio and Television Engineering Directorate of the Postal Service.

Construction started with the building in the spring of 1975 of the more than two kilometers long road with concrete surface between the village and the station site. The foundation work, the road structure, and the road surface was performed by the North-Transdanubian Utility and Underground Construction Enterprise. In November of the same year, the foundation of the transmitter building was completed, and a start was made with the assembly of the steel structure.

The general contractor of the technical building is the Megye Zala State Construction Enterprise. On 4 April of this year, this enterprise handed over the building for installation of the facilities. Soon, the installation of the communications equipment, which is mostly already on Hungarian

soil from the Soviet Union, will be installed. Two transmission lines will bring the electric power needed for the facility, and there will be a Diesel-powered emergency generator.

Soviet experiences were very helpful in the course of the construction work. In the Soviet Union, many similar ground stations have already been built, and Soviet experts have also participated in the construction of the Intersputnik stations in Cuba, Mongolia, the German Democratic Republic, Czechoslovakia, and Poland, which are now operational.

Cooperation between the Soviet Union and Hungary in the field of communication engineering has a tradition already: Hungary has already shipped much equipment to the Soviet Union. Here is a recent example: Soviet experts have helped in Solt to build the 2,000-kilowatt Kossuth transmitter. Stanislav Dimitrievich Pedchenko, design chief, moved from Solt to Taliandorogd. Viktor Petrovich Pashentsev, construction foreman, is already on the site. The general installation contractor, the Precision Mechanical Enterprise, has an agreement according to which Soviet engineers and technicians guide the various parts of the assembly according to an overall plan. A total of 25 specialists will come to Hungary.

According to the plan — and there is every reason to expect that it will be fulfilled on schedule — the facility will be ready to start operations by the end of the year: the Hungarian Intersputnik ground communication station in Taliandorogd will function. The expected total cost of the investment project is 400 million forints.

Leased and Owned Satellites

Much has already been said about the history of the system and the ground station; let us now discuss the technical specifications and tasks of the facility. In three shifts, a total of 60 persons will work on the station in Taliandorogd, most of them from other areas of the country. They have mostly worked in microwave stations before; almost all of them are becoming familiar with the equipment during the construction phase. Thirty-five apartments are being built for them in Tapolca, which is the nearest town.

Once completed, the Hungarian station of Intersputnik will be capable of transmitting one color or black-and-white television program, one radio program, and 60 telephone conversations. In the first stage, however, it will be able to transmit only one television and one radio program and 12 telephone conversations. The microwave connection to Budapest from Taliandorogd will be through Kabhegy and Gyor; the equipment for the relay chain is built at the Orion factory.

The countries taking an active part in the Intersputnik organization — which after the inauguration of the Taliandorogd facility will also include Hungary — will lease Molniya channels from the Soviet Union. These satellites orbit along an elongated, elliptical track around the earth. For continuous operation, three are required. The 12-meter diameter paraboloid antenna must always track the satellite, which orbits approximately 40,000 kilometers away from the surface. Tracking can be accomplished manually (but under normal conditions this is not done) or through a program (using a computer which had been fed the orbital data of the satellite) or automatically (on the basis of signals coming from space).

The geostationary satellites, which appear to hover above the earth, are simpler in this respect; for experimental purposes the Soviet Union has already launched several of these. Over the long range, this will considerably simplify the work. Once the member countries think that this is desirable and economically feasible, Intersputnik will use its own satellite.

2542
CSO: 2502

NEW CONCRETE TV TOWER IN BAKU

Moscow TRUD in Russian 19 Mar 77 p 4

/Article by Yu. Dzhafarov: "Tower Over Baku"/

/Text/ The decision was taken to construct a new television tower in the capital of Azerbaijan SSR.

The design for this tower was developed in the State All-Union Design Institute of the USSR Ministry of Communications, by the authors' collective under the leadership of V. P. Obydov. It will rise to a height of 310 meters, one-half kilometer from the old television tower now used for transmissions to Baku. The old tower is metal; the new will be made of reinforced concrete.

The tower, from its base to a height of 60 meters, will contain 12 floors of service quarters with control rooms equipped for communication with moving objects--automobiles of various special services, including first aid, fire service, militia patrols, and the like. Equipment will also be installed for transmissions to mobile television stations and for meteorological services.

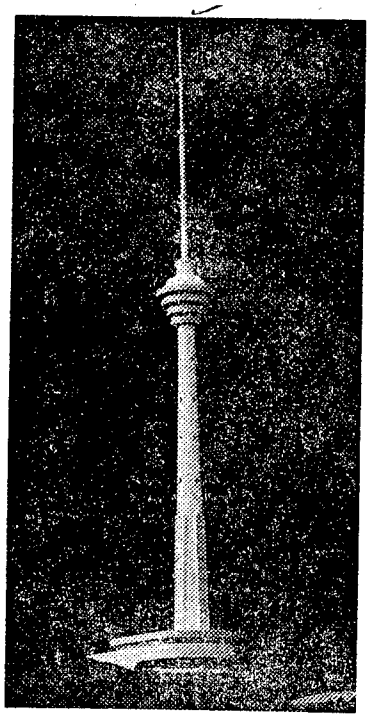
The Baku tower, with its 15-meter diameter base, will not have the traditional broadened foundation. It will actually be built on the craggy steep slope of a mountain; its designers decided to pierce a circular shaft 25 meters deep, in accordance with the diameter of the tower, and to construct the body of the tower directly from the bottom of the shaft. The outer buttressing will be supplied by the rock itself.

A horizontal tunnel emerging 100 meters from the tower will serve as its entrance at the bottom of the shaft. Thus, a safe approach will be provided for personnel to the tower during its construction and when it is in use.

The three-story ground building, appearing to extend from the rock itself, will house the equipment for the television transmitting station itself. Observation platforms and a cafe will be at a height of 170 meters and access to them will be provided by fast elevators.

The new Baku television tower will extend the reliable reception zone to 110 kilometers. Thus, populated points of the Republic now blocked from the reach of direct television transmission by the mountains will receive direct transmissions from Baku.

The picture shows how the new tower will look.



2612
CSO: 5500

BRIEFS

SOVETSKAYA GAVAN COMMUNICATIONS--Raisa Lvovna Konakova, an electrician with the Communications Engineering Operations Center in Sovetskaya Gavan, said that the city is linked practically with all places in the country by telephone, telegraph, teletype and radio. On 25 March the center provided radio communication with fishing trawlers operating thousands of miles away from Sovetskaya Gavan. [Khabarovsk Domestic Service in Russian 0930 GMT 25 Mar 77 OW]

CSO: 5500

BRIEFS

PORTUGAL-FRANCE SUBMARINE CABLE--Norbert Segard, French secretary of state for posts and telecommunications, and Rui Vilar, Portugese minister of transport and communications, recently signed an agreement calling for the laying of a submarine telephone cable between Penmarch, on the Brittany peninsula, and Sesimbra, near Lisbon. This cable will carry 2,580 calls across 800 nautical miles and will be put in service at the end of 1979. The cost of the project is estimated at 200 million francs. To carry out the project, the General Electric Company /CGE/ (Telecommunications Industry Company /CIT/-Alsatian Atomic, Telecommunications and Electronic Construction Company /Alcatel/ and Lyon Cable Works will officially present to both countries a plan for an S-25 submarine cable system having 2,580 4-kHz channels and comprising 180 submerged repeaters and equalizers. Segard and Vilar also raised the possibility of taking additional steps toward cooperation in the field of telecommunications. /Text/ /Paris ELECTRONIQUE ACTUALITES in French 4 Mar 77 p 9/

CSO: 5500

FUTURE OF TELECOMMUNICATIONS DISCUSSED

Paris ELECTRONIQUE ACTUALITES in French 4 Apr 77 p 2

/Text/ An Important Session

Today we will report on one of the most interesting "Electronics + 5" sessions, which was devoted to the future of telecommunications.

This session was chaired by Gerard Thery, telecommunications director. There were three speakers: Mr G. Pelletier, ambassador of Canada to France, former minister of communications of Canada (and co-chairman of this session along with Gerard Thery); Mr A. Reid, director of long-term communications research in the British Post Office; and Mr Whitehead, who for several years was director of the Office of Telecommunications Policy under the direct responsibility of the president of the United States.

We will concentrate on Mr Reid's report on the importance of new telecommunications services, and will mention some of Mr Whitehead's more philosophical reflections made during his presentation and during the discussion period (raising the issue of monopolies), before concluding with the remarks made by Gerard Thery.

A New Image

Electronic communications services may be classified according to the form of the message (alphanumeric and graphic, audio and audiovisual), but also according to the number of persons receiving these messages. If we use this type of classification, and on one axis show the forms of messages and along another axis place the number of persons to whom they are addressed (to a single person, a group of less than 100 people, or to groups of more than 100 people), we find that the major existing services: telegraph, telphone, and telex (person-to-person

communications), radio and television (mass media) occupy opposite regions of the chart, and that other parts of the chart are at the present time still occupied by messages not relayed by electronic transmission: letters, reports, circulars, special publications, newspapers and magazines, records, audio cassettes, face-to-face conversations, meetings, films, theater, video cassettes, and public events.

In fact, each of the boxes of the table we have just mentally drawn is related to new telecommunications services which may enrich, but which may also compete with those services already existing. These new services include: telex, improved data and facsimile networks; text processing, teleconference centers, alphanumeric information services, new and sophisticated telephone services, audio information services, visiophone, videoconferences, and cable television.

In addition to fixed terminal equipment, a great many of these services could serve mobile terminals, either in vehicles or "pocket" terminals.

Although the expected rate of growth of demand for these new services is uncertain, such services will have a great impact not only on the field of telecommunications, but economically and socially as well.

For the telecommunications industry, we may expect that, after the efforts made by the industrialized countries to develop their telephone systems, the growth rate of the telephone system will decrease significantly when the residential equipment rate comes close to 100 percent. Mr Reid said that this saturation will significantly reduce the need for labor both in the production and in the installation of telecommunications equipment. At the same time, the reliability of electronic systems will increase the productivity of labor in maintaining telecommunications systems. In the long run, these trends will reduce job prospects in the basic telephone service industry. However, the new telecommunications services and the growth of the market for new equipment using extended possibilities of modern telephone networks will enable us to sustain and even increase jobs in the telecommunications industry.

Mr Reid said that for government agencies, the new services will ensure dynamic growth, some personnel mobility, a stimulus for technological innovation, and drawing power to attract talent.

As for its economic effects, there is no doubt that progress in micro-electronics will bring about a real reduction in the cost of new telecommunications services. At the same time, the cost of competitive services -- transportation, printed documents, mail -- may increase significantly. Therefore, these new services will have varied growth rates in practical applications, differing for residential, business, or institutional use. In each case, the direct economic effect of the use of telecommunications will be to increase the effectiveness of communication; it will be possible to send more information more quickly, more reliably, and with greater fidelity to greater distances, and at costs which will be less than those of the traditional methods.

Frequently, as this phenomenon happens, it will increase the efficiency of other activities, such as in certain areas of transportation or retail sales. These new services will favor the development of economic activities based just on data handling. And what will its social effects be? Some statistics indicate that the probability of interaction between two persons is inversely proportional to the distance separating them. So, although there are some special factors, such as language differences, which favor local contact and might require travel, it seems reasonable to think that the factor of greatest weight in the future will be the growing cost of face-to-face contact (both in money and in time) with increased distances; this will encourage us to use other means of communication. In these conditions, although postal costs are generally independent of distance, all things being equal, mail costs will seem rather high for short distances, where it can be used as one element among several types of communication, including of course face-to-face contact.

There will be many new services arising as possible substitutes for these face-to-face contacts, substitutes which will reduce the effects of distance and make horizons recede. Mr Reid said that this process has been described by Melvin Webber, an American author who speaks of the modern professional as no longer living in a single place, but in a web of geographic communities, with which he continually interacts. This should be especially true of highly specialized people who may be called upon to settle technical conflicts anywhere in the world.

By abolishing distance, the new means of communication will have the more general effect of favoring the proliferation of geographically dispersed groups and associations in all fields (business, religious, etc.). With this geographic unification will come social pluralism in interests, behavior, and activities.

New Media Developments

The new means of person-to-person communication (telex, improved information networks, new telephone and visiophone services) will be part of the spectrum of possible replacements for face-to-face contact. In fact, the need for direct contact places three types of constraints on our activities. It forces us to meet together in collective places such as schools, offices, universities, etc. It obviously obliges us to cluster in cities in order to reduce the distance from these points of communication. Then, it forces us to be constantly moving back and forth between these different places. The development of individual communications could be a partial way of avoiding these constraints, and could eventually lead to a decentralization of large educational facilities, offices, or even institutions into smaller units, which would be a boon to regional development. On the other hand, the development of systems such as the visiophone should favor some special applications: medical diagnosis, education, signature verification, television monitoring of some equipment or functions, etc.

Like person-to-person services, audio and video conference services will have some impact on small group contacts. On this topic, we should point out the great value of teleconferences which will record all transactions taking place, with the possibility of a later replay for a closer analysis; this would not be possible with the normal audio or video conference facilities.

The impact of new television services on large group communications has already been felt with cable television, which now provides its users with a choice of about 30 television channels.

Although such systems are continuing to expand, the cost of installation of the special cables they use is high, as are production and transmission costs of providing a wide range of television programs. For this reason, Mr Reid felt that the development of cable television can only be controled -- in the short or midterm period -- by audio and alphanumeric information services. It is true that these same services may be transmitted on existing telephone lines, using less expensive equipment than the television equipment used for production, storage, or transmission.

This is why the experimental system, Viewdata, set up by the British PTT /Postal and Telecommunications Administration/, uses telephone lines for transmission with a decoder (either integrated or outside the television set) and a page selection keyboard. It can display a maximum of 970 characters per page

and has a format identical to the Ceefax and Oracle systems; these are similar, but lower capacity systems of the BBC and the Independent Broadcasting Authority. Although Viewdata costs the user more than the Ceefax and Oracle services, because it includes telephone calls, the Viewdata system does offer this advantage: unlike Ceefax and Oracle, the number of pages is not limited, and immediate access is available.

Audio information services (which get over 500 million calls a day in Great Britain) are extremely diversified and may become more so without making any technical improvements in the system.

However, improvements are possible, such as the use of wall loudspeakers with push buttons and telephone indexes, perhaps equipped with a small integrated system which records areas of individual interest, thus forming a personalized information system.

Because they use the existing telephone network, these audio and alphanumeric services may develop rapidly in countries that have good telephone service. On a longer term basis, it is probable that teledistribution will complete this coverage.

Questions and Answers

During the discussion which followed these presentations, one of the points raised most often was telecommunications policy and its various implications for the roles of the public and private sectors, network and equipment coordination, and ways of quickly improving user services, keeping in mind the cost of these services.

Mr Whitehead, reiterating some aspects of his report, first remarked that the application of electronic technology to telecommunications is now becoming a matter of business and imagination, rather than a really technical or technological problem. He said that user access to more abundant and more varied information will bring about a new distribution of economic and political power; this phenomenon will be accelerated by the increased capacity of radio and television. According to Mr Whitehead, we are moving toward a decentralized and spread out information civilization which, in place of the traditional concept of geographic villages, will substitute the concept of electronic information communities; multinational companies already give some idea of this concept.

Obviously, said Mr Whitehead, government will try to slow down this change, which tends to abolish centralizing power and, depending on particular cases, they will exercise a more or less marked censorship over audio and video programming. In like manner, the large telecommunications monopolies will try to delay this decentralization economy by controling the development of cable television. Here we will find that there is information and there is information.

So long as the channels and means of communication are few in number, governments will remain all powerful. We must find the best possible combinations of electronics and telecommunications to limit monopolistic government control as these means of telecommunications develop.

Mr Whitehead said that the responsibility for selecting these new means of communication and their management is generally left up to government by industry. He stressed that communications system developers would have to take a greater interest in the economic and political aspects of their systems, especially in large companies whose economic weight requires at least some minimum of philosophical reflection.

Which Way for Development?

Another issue raised during this session was: what guidelines should be used for planning telecommunications development? An immediate answer to this seems to be that development is necessarily dependent upon three things: the behavior of the users, the state of advancement of networks, and the state of the art of technology. Of course, the three factors may evolve at the same pace.

In Mr Reid's opinion, access to new possibilities of telecommunication will be reached -- and this is already happening -- by a process of transplanting new technology or new systems onto existing infrastructures. This process may take place, he feels, in three different ways. One way is by improving the existing transmission and switching networks, which may be a rather lengthy procedure. Another way is by superimposing a new network over an existing network. And thirdly, by adding to the existing network intelligent terminals which offer the user new possibilities which are usually not available with the traditional equipment connected on the same network.

Mr Whitehead agreed with this point of view, but stressed that superimposing new facilities will certainly be the best of the three possibilities.

For a good many years to come, a number of countries will have two types of switching equipment operating at the same time: a conventional system and a digital system. Some of the new telecommunications equipment will be immediately compatible with the present pass bands, and its use will therefore cause no difficulty. This will undoubtedly be the case for most new services which will use the telephone network and television receivers.

During this discussion on the development of new services, a representative of CIT-Alcatel /Industrial Telecommunications Company-Alsatian Atomic, Telecommunications, and Electronic Construction Company/ commented that it is possible to set up an economic hierarchy for establishing new means of telecommunications.

At the very first level of sophistication, the replacement of conventional telephones by a more advanced telephone may be considered. (This replacement could be done either by government or by private enterprise); this would provide immediate access to some new services.

At a second phase of advancement, it is possible to offer the subscriber the possibilities of teleconferences, number transfer systems, and shortened dialing systems. In addition to the need for special terminals, this time the central exchange must also be modified. Furthermore, this service must be efficiently publicized and promoted so that it will develop in satisfactory economic conditions.

The third level of sophistication requires a directory. This is true of facsimile which, while it causes no technical problems itself, must be in widespread use if it is to develop in favorable conditions.

After this, there are applications which require a modification of the actual transmission network itself. This is true of the visiophone (1 MHz signals), which requires the availability at the same time of suitable terminals, lines, switchers, and networks.

One of the big questions being asked concerns the role of government and of private industry in developing these new services and in defining the related equipment.

The American panelist, Mr Whitehead, felt that there are aspects of telecommunications which necessarily require a monopoly, either governmental or private. For obvious geographic and economic reasons, a certain degree of homogeneity must be

maintained in the transmission network; this requires centralized network control.

The American experience with equipment that can be attached to the telephone receiver shows that, despite regulations governing its use, all this equipment, which is openly for sale, is used to the point of overloading the network, creating an extremely confusing situation which sometimes even harms the proper operation of the network. Because of this, Mr Whitehead felt that real control must be exercised on the use of this new equipment.

Then Mr Reid said that the problem shouldn't be stated as an either/or alternative: either a monopoly or anarchy. Economics plays a large part in the logic of a communication system. In the United States, the telex system is standardized; it is logical, but it is old (the position of these adjectives could be reversed). The choice therefore has to be made between a flexible system, with more or less modern variants, and a less advanced and less homogeneous system. Now it is quite obvious, he added, that, in the case of a television set, the user may be interested only in the make of his set; in the case of a telex system, he must take some interest in the entire network. Equipment compatibility is obviously the first condition to be fulfilled. So, while it may be good for a "functional" monopoly to be set up to ensure compatibility, this monopoly does not have to be a legal monopoly. It can be left up to private enterprise, added Mr Reid, and we can rely on the effect of large-scale savings to act in the end as a natural guide for the best use of the best equipment.

Mentioning the necessary compatibility of the telex network, Mr Reid said that it is always possible, from one day to the next, for a new machine to make all the existing telex equipment obsolete, if care is not taken to ensure signal compatibility. Everything suggests, he said, that a new IBM printer will soon be on the market which could replace the current models, by offering more advantages. As soon as the new models can supply standardized signals, they may find a place in the market and nothing will stop them from having accessories offering the user all the additional services desired.

Getting Ready for the Change

Mr Thery's concluding remarks to this Electronics and Telecommunications Session consisted of one comment and two thoughts presented as questions. In the first place, observed Mr Thery, the head of the DGT /expansion unknown/, the growth of

telecommunications is obvious in all countries, whatever their state of development, and it is accompanied by a diversification of telecommunications services. It then follows that this development and this diversification of services foreshadow a great change in economic and social relations; it also seems that the development of telecommunications will be accompanied by problems, tensions, or even perhaps some dangers for individual liberties.

Concerning the first point, we may find that, even in countries with a dense telephone network, the market saturation threshold will be moved back by the development of related services, such as telecopy service. Also, data transmission on telephone lines, telex, etc. will bring about new networks. Gerard Thery felt that Transpac should radically change the use of computers and transmission networks, while the rates for use of this new network (independent of distance) will open up new prospects for regional development. And at the same time, constraints related to the small number of frequencies available will probably be abated with the capability of more fully using the available bands, because of developments in micro-electronics.

This will be especially true in coming years, as wave guides and optical fibers will enable us to lessen these problems in an economical way.

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AIR FORCE PLANS TIME-SWITCHING TELEPHONE NETWORK

Paris ELECTRONIQUE ACTUALITES in French 18 Mar 77 pp 1, 8

/Article by D. Levy/

/Text/ Chartres. This year the Air Force started a major telephone equipment program based on electronic time-switching. The network will have 17 automatic switching stations and 36 satellite centers covering the entire nation. This electronic switching program, developed jointly by SAT /Telecommunications Corporation/ and AOIP /expansion unknown/ will cost about 200 million francs, and will be completely operational by 1980. This telephone network will be operated by the Air Force Transmissions Command, which also operates other communications facilities for Air Force units, such as Air 70, the radio network, and rents some facilities from the PTT /Postal and Telecommunications Administration/. The Transmissions Command also operates the RAID /Digital Data Automatic Relay System/ message switching system, and radio equipment, transmitters and receivers, as well as remote control equipment.

At the end of the trial period of using the SAT-AOIP equipment, which was done with a smaller network, the Air Force decided to buy a time-switching telephone network covering the entire country. This network is based on four sub-networks. Before the end of this year, the first of these sub-networks with four automatic time-switchers -- located at Chartres, Montyon, Metz, and Bordeaux -- will be in place. The entire system will be gradually established until it is completed in 1980.

In its final phase, the network will have 17 automatic time-switchers and 36 satellite centers. This equipment will be made jointly by SAT and AOIP. Another firm, TRT /Radio and Telephone Communications/ will supply remote signaling units.

This electronic switching program is costing about 200 million francs, spread over a 5-year period.

Powerful Transmission Equipment

This time-switching system will be the Air Force's main telecommunications equipment program for the next 5 years. In this field of infrastructure support, which is under the responsibility of the Air Force Transmissions Command (headed by Air Force Major General Moutin), the two most recent major projects were the establishment of the Air 70 radio network (between 1968 and 1973) and the RAID message switching system.

The Air 70 network has 23 main radio stations connected by secondary links to 56 terminals located in Air Force bases. This network, developed by Thomson-CSF /Radio Company/, SAT, and TRT cost the Air Force 500 million francs. It has 1,850 telephone channels and 400 telegraph channels.

The RAID message switching system was added to this basic network; it is used for telegraph communications. The RAID system consists of four centers located at Taverny, Metz, Lyon, and Bordeaux. This equipment was developed by CIT-ALCATEL /Industrial Telecommunications Company-Alsatian Atomic, Telecommunications, and Electronic Construction Company/. It has a total input-output capacity of 165,000 messages.

In addition to these two networks, the Air Force also has other means of telecommunication, such as the TAMIS /Automatic Military Inter-STRIDA* Telephone System/ which transmits radar tracking reports on all aircraft flying over France; the HF radio network, OMIT, which handles communications with overseas territories, Djibouti, and Reunion island, either directly or via Intelsat satellites; a new 1 and 8 W HF SSB network (Thomson-CSF); and over 80 radiotelephone networks linking from two to 20 stations.

Annual Budget of 740 Million Francs

The Air Force Transmissions Command has an annual budget of approximately 740 million francs, divided as follows: 500 million for "telecommunications" investments in the broad sense (since this item covers aeronautic equipment such as radar, DME, and tacan, leaving about 120 million for telecommunications in a

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* Air Defense Data Processing and Display System.

more restricted sense); and 240 million for operations, including replacements. In addition to credits for the time-switching network, this budget also covers modernization of the Air 70 network (elimination of tubes) and the strengthening of its grid, plus the replacement of old model Ariane equipment by the more modern "647" 120-channel radio equipment made by Thomson-CSF.

Today the Air Force has about 6,000 telephone circuits; 2,250 are supplied by the Air 70 network and 3,750 are rented from the PTT. "This 'diversity' policy will be continued," we were told. "It is a good compromise between what we need and what we can afford, and it does provide the requisite redundancy." In 1976, the Air Force paid about 20 million francs in rental fees to the PTT. "This amount would have been over 100 million if all of our equipment were rented from the PTT."

In the future, the question of a high speed data transmission network for the Air Force will arise. Is the use of Transpac being considered? "It does not seem so," we were told. The most probable decision would be either to build a special network or to adapt existing radio links.

To carry out its technical mission from its Operations Center at Villacoublay, the Air Force Transmissions Command does have special units such as the radio cabling squadron (for the Air 70 network), the automatic telegraph relay centers, transmission centers, and units handling installation and repair, an electronics squadron at Orleans which is responsible for protecting the Air Force radio networks, and a unit responsible for calibration of radio aids.

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STE CONTRACTS TO MAKE NORTHERN TELEPHONES FOR PTT

Paris ELECTRONIQUE ACTUALITES in French 4 Mar 77 pp 1, 9

/Article by D. Levy/

/Text/ The SFE /French Ericcson Telephone Company/ has just signed a contract with Northern Telecom giving STE the exclusive manufacturing rights in France for the "Contempra" telephone. STE will also sell this product in France and in some foreign countries. This contract was signed after the PTT /Postal and Telecommunications Administration/ had selected the Contempra after a test program conducted in three regions of France. The PTT then asked the Canadian firm to find a French partner capable of adapting, manufacturing, and supplying this telephone to the PTT. Northern selected STE, which will manufacture the phone for the public and private market. The Contempra, with its quite attractive styling, could take a rather large share of the public market, estimated at 19 million phones between now and 1982, if the PTT offers an attractive marketing policy.

French telephone subscribers reacted very favorably to the Contempra model made available by the PTT during the test program conducted for a 3-year period in three regions of France. After its initial order for several thousand phones, this reaction induced the PTT to place a much larger order for 75,000 Contempra phones during Mr Segard's trip to Canada last year, and to ask Northern to find a French partner to manufacture the Contempra in France.

SFE, which was selected from among several rival firms, will manufacture and sell this phone for the public and private market in France and to a large portion of the foreign market.

Over 2 million Contempra phone models have been produced in Northern's plants in Canada, the United States, and Ireland. The Contempra will be a new addition to the line of phones developed by STE. STE, which last year had sales of over 30 million francs in this sector, has already designed and produced a number of phone models, including: the U-43 (started in 1943) and the S-63 (in 1963), which is the most widely used phone in France; 2.5 million phones of this type have been produced by STE; it manufactures 1,500 a day.

STE's years of experience with telephone manufacturing will be continued with the Contempra which, according to Mr Le Bihan, the executive vice-president of STE, "is an intermediate phone between today's equipment and the electronic telephone of the future; it will be able to handle all the services offered by the new electronic central exchanges. The STE is now working on plans for the future electronic phone."

The Contempra's Share of the Market

After this STE-Northern agreement, one question arises: what will Contempra's share of the public market be? Needs between now and 1982 are considerable: for the 13 million major new telephone lines which will be built during this period, 19 million phones will be needed. The PTT's marketing policy will be the decisive factor determining the Contempra's share of this total.

Of course, one of the methods of "regulation" will be the fee charged for use of this phone. For the moment, the rates for the Contempra have not yet been set, we were told by Mr Delchier, commercial director at the DGT [expansion unknown], who added that: "The price the user will pay must reflect the advantages offered by the Contempra over and above a conventional phone, but it must not be so high that it inhibits its success." Mr Delchier believes that the Contempra, one of the line of phones offered by the PTT to its subscribers (conventional phones, touch-tone models, color phones), reflects the PTT's desire to diversify what it offers its users, enabling the users to select what they want, based on the price and the appeal of the equipment.

Northern is already getting ready to deliver a first shipment of 18,600 Contempra phones to STE; these will be followed by 56,400 other Contempras (the 75,000 phones ordered by the PTT). STE will then produce the Contempra in its plants at Saint-Nicolas in Normandy. Its first phones will be ready for the PTT in April 1978.

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TRT TO MAKE RADIOTELEPHONES FOR NATIONAL GENDARMERY

Paris ELECTRONIQUE ACTUALITES in French 4 Mar 77 p 8

/Text/ After the SEFT /Telecommunications Research and Manufacturing Section/ of the DTAT /Military Armament Technical Office/ issued an invitation for bids, TRT /Radio and Telephone Communications/ was selected to supply National Gendarmery vehicles with mobile VHF/FM transmitter-receivers, model TRVP-16.

The TRVP is one of a new family of transmitter-receivers developed by TRT to meet the growing need for short and medium-range transmission in the various VHF ranges reserved for radiotelephone use. This equipment offers great operational versatility. It is controled by a frequency synthesizer built around a special integrated circuit designed by TRT. This means that the user has continually available all the channels in the frequency bands allocated.

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FRENCH TV, RADIO NETWORK PLANS 'BIG DRIVE' IN ASIA

Hong Kong AFP in English 0020 GMT 2 Apr 77 OW

[Article by Loic Salmon]

[Excerpts] Tokyo, 1 Apr (AFP)--The French television and radio network is planning a big drive in Asia and hopes to conclude agreements with Japan and South Korea. Talks with Malaysia, the Philippines, Hong Kong, Singapore and Taiwan are already taking place.

The French broadcasting system, a state monopoly, groups seven companies: three television channels, one radio company, one production enterprise, one technical and resthetic [as received] research institute and one broadcasting organization--all stemming from the French Radio Broadcasting and Television Office (ORTF) round-up in 1975.

It has two transmitters in the East, in Singapore and Tokyo. The latter was reopened at the beginning of the year by Jean-Marc Pottiez, representing the French broadcasting organizations. The ORTF had originally been installed in Tokyo from 1963 to 1974.

In Japan, 92 percent of the population watch the programmes of seven TV channels for more than 3 hours per day in Tokyo alone. French broadcasting is in a fair way to concluding agreements to exchange programmes, information and possibly personnel with the national NHK channel and the private stations ABC and MBS, of Osaka, Japan's second biggest city. Plans for joint Franco-Japanese productions are in hand.

The Japanese manufacturer Sony has come to an agreement with the French company Thomson CSF to market video cassettes in France and to promote the TV professionals' "micro-camera," the one most sold in the world, particularly in the United States.

Yet, the Japanese are spearheading progress in this field. They have already carried out several TV tests with piped TV to better community life in the

dormitory towns. At Tama, in the suburbs of Tokyo, in January they perfected a closed circuit linking the listeners' receiver set with different transmitting centres such as a department store, bank, school and town hall.

In the new town of Higashicoma, this circuit is to be linked to the computers of an information centre, making two-way communications possible.

For 5 years the Tateyama-Chiba urban centre has been using a circuit linking nine infant schools, 12 primary schools, seven secondary schools and 10 public buildings.

Why then this sudden infatuation with France? Mr Pottiez attributes it to "the thirst of the Japanese and the Asians for what is French."

"Despite the supremacy of English and the dollar in international relations," he says, "it is interesting to note that foreign students are switching more and more to the languages of countries with great cultural traditions like France and China."

In Seoul, South Korea, 2,000 students of French crowd the French cultural centre every day to attend the three daily film shows. There, too, French broadcasting is to conclude agreements on exchanges of programmes and on co-productions with the two main South Korean TV channels, TBC and KBS.

Southeast Asia is also in the running. Television organizations in Hong Kong, Taipei, Manila, Bangkok and Kuala Lumpur are asking for French TV films and programmes for women. The French trade drive in the region has been facilitated since January by the installation of a French transmitter in Singapore.

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BRIEFS

REORGANIZATION OF ELECTRONICS INDUSTRY--[Excerpt] The three most important Norwegian electronics companies, Kongsberg Vapenfabrikk, Tandbergs Radiobrikk and Elekrisk Bureau, have signed an industrial (research and development) and commercial agreement. The three companies, which employ a total of 9,500 persons, have a world business turnover of 1,757,000,000 Norwegian kroner (about 1,670,000,000 franks). We note that these three companies are responsible for more than 50 percent of Norwegian electronics exports. In contrast with important industrial countries which sell about 75 percent of their electronics production domestically, the Norwegian industry, according to the latest bulletin of the Norwegian Export Council, depends essentially on exports, which vary between 40 and 50 percent of total production. We also note that Norway only has a total of about 40 companies devoted to electronics. [Paris ELECTRONIQUE ACTUALITES in French 4 Mar 77 p 2]

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ULTRAVIOLET LASER BEAM DEVELOPED

Budapest MUSZAKI ELET in Hungarian 22 Apr 77 p 19 WA

[Excerpts] Recently the first device which emits ultraviolet laser beams as the result of pumping xenon was put into operation in the FRG. The most important component of the new laser device is a large, horizontal, cylindrical electron gun. This gun, developed by a research team of the Max Planck Society, provides electrons accelerated to 500,000 V. It is this which makes possible the pumping of the xenon. As a result of the electron bombardment, electrically charged xenon/ions, which initially live for only a few billionths of a second, come into being. Due to collisions, xenon molecules are formed from these ions. The xenon molecules then return gradually from the pumped state to a state of basic energy. The energy released in the course of this process is transmitted in the form of 0.173-micrometer wave length ultraviolet laser beams. Since these states are very short-lived, very short laser impulses are obtained. The xenon laser consists of two coaxial tubes placed inside one another. The electrons accelerated in the electron gun go from the exterior 4 cm-diameter tube into the interior, approximately 4 mm, tube. They then penetrate a titanium wall and bombard the xenon uniformly from all sides. To increase the possibility of the greatest number of electrons reaching the target, the xenon gas is kept at a pressure of 13 atmospheres. An ultraviolet laser of this sort makes it possible to pump the molecules with 50 times greater energy than is the case with infrared lasers. Thus the effects achieved with them are far more drastic and offer chemistry quite new possibilities. Energy does not dissipate through the entire system, but goes directly to those molecules which are needed in the course of a desired reaction. Since the strength of the laser beam can be precisely portioned, it can be used to investigate various states of oscillation. The pumping of specific molecules has made it possible for the first time to study each stage of a chemical reaction separately. Reactions can be controlled in such a way that generation of products harmful to the environment is avoided and compounds can be prepared which cannot be prepared by traditional methods.

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